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ABSTRACT

The linkage between formal education and the development efforts of third world nations is examined. Consideration is given to the fields in which education may be most helpful, such as social, political, and cultural. The extent to which the development of education itself is a part of the total national development effort is also discussed. A detailed examination is made of current views about the link between education and development, and available evidence concerning this relationship is explored. The contribution of education to development and vice versa in the context of African countries south of the Sahara is analyzed. The importance of economic factors is pointed out in a discussion of the correlation between the gross national product and education. Contemporary attitudes of students and parents toward the value of certain types of education are noted with the warning that some of these views are inclined to be short-sighted and not conducive to fruitful long-range educational and developmental planning. (JD)

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AFRICAN CURRICULUM ORGANISATION (ACO)

ED 195 495

BASIC TRAINING COURSE IN SYSTEMATIC CURRICULUM DEVELOPMENT

COURSE SEVEN:
EDUCATION AND DEVELOPMENT
UNIT 2

SP 015 883

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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C. Abayo, Institute of Education, Dar es Salaam, Tanzania
E. Adagala, Kenya Institute of Education
Chief C.A. Adewole, African Social Studies Programme,Nairobi, Kenya
Dr. Michael Atchia, Mauritius Institute of Education
Dr. S.T. Bajah, Institute of Education, University of Ibadan, Nigeria
A. Bagunywa, National Curriculum Development Centre, Kampala, Uganda
Dr. H. Bergmann, GTZ, Federal Republic of Germany
V. Brigginshaw, Kenyatta University College
Dr. B.O. Challeb, Kenyatta University College
K.A. Chali, National Curriculum Development Centre, Lusaka, Zambia
Mr. Chipeta, Ministry of Education, Malawi
Dr. Magnus J.A. Cole, Njala University College, Sierra Leone
A.A. Elmaawy, Ministry of Education, Nairobi, Kenya
Dr. Falayajoh, Institute of Education, University of Ibadan, Nigeria
W. Gatama, Kenya Institute of Education
S. Gacece, City Education Department, Nairobi, Kenya
V. Hookoomsing, Institute of Education, Mauritius
W. Kangethe, Kenya Institute of Education
B. Kateregga, Kenyatta University College
P. Kiarie, Kenya Institute of Education
M.K. Kubiriba, National Curriculum Development Centre,Kampala,Uganda
P. Kuria, Kenya Institute of Education
Dr. A. Labor, Institute of Education, Freetown, Sierra Leone
P. Makumba, Kenya Institute of Education
B. Matiru, Institute of Adult Studies, Unviersity of Nairobi
Chief (Dr.) A.D. Mengot, Unesco/BREDA, Dakar, Senegal
G. Muito, Kenya Institute of Education
E.M. Mugiri, Ag. Director, Kenya Institute of Education
L.K. Mwathi, Kenya Institute of Education
A. Nabwera, Kenyatta University College
S.W. Nderitu, Highridge Teachers College, Kenya
A. Njenga, Kenya Institute of Education
D. Nturibi, Institute of Adult Studies, University of Nairobi
Dr. Pai Obanya, Institute of Education, University of Ibadan, Nigeria
Dr. G.P. Oluoch, Principal, Kenya Science Teachers College
Dr. L. Omondi, Kenyatta University College
E. Palmer, Institute of Education, Freetown, Sierra Leone
Dr. K.B. Quansah, University of Cape Coast,Ghana/Member,Permanent Course Team
Peter Sachsenmeier,ACO, GTZ Coordinator, Member of Permanent Course Team
M. Savage, Kenya Institute of Education
Dr. E.M. Sebetane, National University of Lesotho
D. Sentamu, National Curriculum Development Centre, Kampala, Uganda
M. Sonko, Curriculum Development Centre, Banjul, The Gambia
Dr. E. M. Standa, Kenyatta University College
Sr. A. Talbcid, Kenya Institute of Education
Dr. S. Theljane, National University of Lesotho
W. E. Ubima, University of Nairobi
A.O. Waka, Kenya Institute of Education
Dr. K. Wambari, Kenyatta University College
Dr. E.A. Yoloye, Professor, Institute of Education, University of Ibadan,Nigeria, and Chairman, African Curriculum Organization
United Nations Environmental Programme (UNEP), Nairobi.

These study materials were edited and compiled from the course author's contribution by Peter Sachsenmeier.
Course author: Dr H. Bergmann

EDITOR'S NOTE

This is the second contribution to our study materials on Education and Development. Although some of the basic discussions remain, the authors, in each case have drawn on different materials, thus reinforcing and illuminating each others discussion of this difficult topic.

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Education and Development

1. *Introduction*

The first two development decades have been characterized by a strong belief in the importance of education for economic growth and overall societal development. Yet, at the same time, how exactly education contributes to development is by no means clear as is borne out by BLAUG's (1968, p. 349) statement:

> However remarkable has been the recent growth of interest in educational planning in deveped countries, the whole-hearted endorsement of educational planning in all underdeveloped countries in the last decade is without precedent in the histroy of state education. With very few exceptions, every ministry of education in poor countries around the world is today engaged in implementing short-term educational plans and drawing up long-term ones. There is broad agreement that educational planning should be carried out as an inherent part of general economic planning but no concensus has yet emerged on what precise meaning to attach to the relationship between educational and economic planning.

How public feelings were, on this issue, at the beginning of the first development decade may be seen from the following: (Balogh, 1968, p. 385)

> Thus Mr. Adlseshia, UNESCO's Acting Director General .....said:
> 'So my thesis is that accelerated economic growth is, to a large degree, a function of adequate and commensurate development of human resources.....the expenditure in formal education, in training, in mass media and in research and development leads to increased returns both to the individual and to to the community.

or simply

> Modernization requires that education be given a central place.....(Anderson,C.A. and M. J. Bowman, 1963, p. 359)

One of the pioneers of the economics of education states:

> It simply is not possible to have the fruits of modern agriculture and abundance of modern industry without making large investments in human beings. (Schultz,T.W., 1968, p.31)

In 1979, this view was restated by a different author as follows:

> Education and its resulting humna-resources development remains an essential preinvestment for over-all economic and social development, but it will be a far more remunerative investment as it becomes better planned and as it adapts itself far more rapidly to the changing world around it. (UNESCO, Educational Planning, 1970, p.22/23).
>
> ....it is...clear that education is a necessary condition of lasting economic progress.....(UNESCO, Educational Planning, 1970 p. 77)

The belief is strong and has motivated educational policies in many countries. But as early as 1969 teh failure of policies which simply expnaded the system of formal education had become evident:

> The expansionist strategy of educational development which nations everywhere have been pursuing pell-mell for more than a decade has now run into serious trouble. The time has...come for a major change of strategy and for corresponding changes in educational planning. (Coombs,Ph.,1969, p.15).

Obviously the link between education and development was much more complex than the planners and policy-makers of the early sixties ahd thought. Resources are too scarce to permit educational policy to be influenced by wishful thinking, on the other hand, the early hopes need not turn into despair altogether. The present course shall therefore:

- examine in some detail current views about the link between education and development,
- discuss available evidence concerning this relationship,
- have a look at the contribution of education to development and vice versa in the context of African countries south of the Sahara.

2. *Definitions*

Before embarking on the main discussion, however, it will be necessary to define the central terms used, namely education and development.
Precisely because they are terms used in everyday's discussions they are bound to take on a variety of meanings which easily leads to ambiguities and misunderstandings in complex arguments.

2.1. Education

Education is seen as part of the processes of socialisation which go on throughout an individual's lifetime. But socialization means all learning including learning experiences that come as by-products of interactions with quite different intentions. Education here means *those interactions whose main purpose is learning and where this purpose is jointly perceived by all those participating in the interaction.*
Education is...."....*the totality of organised processes of teaching and learning.*"(Nestvogel, R., 1978, p. 43, translation mine).
This seems a rather formal definition of education It leads to the important fact, however, that education as a specialised and organised set of interactions takes place in institutions the sole aim which is to provide education.
Can we go further in our attempt to define education and say something about the content of education?
If we consider the fact that education does not happen in a vacuum but always in a historical setting, in a society with its political and socio-economic aims, we might say:
Education is a formalised process by which the values and knowledge of a given society are being transmitted from on generation to the next.+
By referring to a formalised process we recognise that this is not only achieved through education but also through all other socialization processes.
Splitting up this general objectives of education

into components, LEWIS, 1969, p. 74 arrives at the following list:

"In preparing people for life, education has to perform several functions.

1. Socialization, teaching the child to live with others, teaching social roles, culture patterns, rules of behaviour, history, and so on.
2. Teaching needed facts about the physical world, some science, some geography.
3. Imparting some understanding and appreciation of our artistic heritage.
4. Providing intellectual tools, reading, mathematics, languages, logical analysis and so on.
5. Training the body.....
6. Teaching specialized skills for use in adult life, whether in the home.... or in the market place. Everybody agrees that the school must do all these things...."

It seems plausible that learners going through education get equipped to play their part in a society's development effort. Yet one might be careful not to place too much emphasis on the transmission of values and knowledge between generations. Theories of modernisation warn against "traditionalism" as a force inhibiting development efforts. Without further analysis let us just retain that education will have to pass on to pupils and students a substantial amount of knowledge unknown to the generation of their parents and cannot leave their set of values out from critical examination.

President Nyerere refers to such a definition of education when he says: "Colonial education in this country was therefore not transmitting the values and knowledge of Tanzania society from one generation to the next: it was a deliberate attempt to change those values and to replace traditional knowledge...." Nyerere, J.K., Education for Self-Reliance. Gerhardt refers to a similar definition characterizing the permanent task of the teacher as "..... introducing the younger generation to the knowledge accummulated by previous generations." (Gerhardt, =979, p.=3, translation mine)

Turning again to the more formal, institutional aspect of education it has become customary to destinguish a whole range of institutional settings in which educational precesses take place. The most important distinction heere is the one between informal, non-formal and formal education. Formal education is equated with a society's system of school from kindergarten to university leaving out such educational processes as adult literacy programmes, agricultural extension work, youth movements etc. We shall narrow our focus of interest even further and concentrate on primary and secondary education. The reason here is that most curriculum developers will have to work within this setting, and it is for them that this course is to be of use.

2.2. Development

The term "development" is highly controversial. Since it denotes a movement, an ongoing process, the question immediately arises as to the direction of such a movement. And since it is the development of whole societies and states, again in an historical situation dominated by power conflicts, the question turns into a political one: will development lead to changes in the international power balance/imbalance? It is not surprising, therefore, to find internationally accepted definitions of development to be highly formal and devoid of meaning:

> Development is growth plus change, change, in turn, is social and cultural as well as economic and quantitative as well as qualitative. (UN, 1962).

Some interesting elements are contained in a definition supplied by the United Nations Economic and Social Council (ECOSOC).

> ..... planned progress in the direction of exactly defined goals which are based on overall societal values. (Bendokat, 1977, p.10).

Within any given country, development is seen as a process in the subsystems of economy, society and polity. One of the elements is planning. A situation of poverty and rising demands for better conditions of life does not automatically improve if left to the sociopolitical forces in a given society and its international contect. There is need for a concerted effort, coordinated between the various organisations and agencies and making provisions for the years ahead. The other element is the basis in which any true development effort necessarily rests, societal values which govern the definition of development goals. This implies that development is not an attempt at realizing goals set by force and agencies outside the society pursuing them. Any society embarking on a drive towards development will have to define its own aims. For example, President Nyerere tells us that Tanzanian society, in an attempt to complete the process of decolonization, aimsat liberating man as her supreme goal in development:

> ..Development has a purpose, and that lies in the liberation of man. It is true that we in the Third World talk much about economic development - about the quantitative expansion of production of goods and services as well as their prerequisites. But the goods are needed to serve people..... One needs political, social and economic structures in order to foster the development of human freedom and dignity. We come back to..... liberated man - as the goal of all activities, as the goal of development. (Nyerere, J.K., 1976, translation from a German version mine)

Another author puts it more generally when he states about rural development:

> ...the motive for development must come from rural people themselves, only this can guarantee that their traditional social values are built into the new concepts of living and working. Only an indigenous development concept makes sure that the needs of the community are fulfilled. Culture and

> tradition must be conserved in their roots they must be included as far as possible in the development process, they cannot just be replaced by modern technologies. (Metzger,U., 1978, p. 12)

The ultimate aim of development ideally has to be a project of the future for a given society and defined by this society taking into account its own historical traditions and values.

Despite the effort at clarification, these are all very general and broad concepts of development. Some further precision can be got when we ask which part of society is going to be effected by development. Our first definition named two processes, growth and change. Areas where this was to occur are soietal structures, culture, the political system, and in particular the economy. In fact, there is an important difference between economic growth and economic development (as much as there is a difference between the simple growth of an educational system and a full-fledged curriculum reform). Growth is nothing more than an increase in the output of a country's economy as measured in GNP (gross national product) or per capita income (GNP per inhabitant). It could come about simply by selling out a country's natural non-renewable resources, e.g. crude oil, metal ore, coal, etc.). If nothing else happens to the country's economy and if all the income is used up in consumption, its GNP will go back to its former level once the natural resources are exhausted. In the meantime, it will vary according to world market prices. But if the income is used to build up an economy producing other goods, an expanding agriculture and industry might take over from natural resources and make for more economic growth. In such a case, the economic structure will have changed, and that is when one would talk of economic development. To quote again the case of Tanzania, it seems to be exactly along this line that this country orients its development effort:

> Our aim is self-reliance. We shall have to reach a position in which we can overcome adverse economic changes coming from outside without desaster, and in which we have sufficient stocks of food, raw materials and foreign exchange to bridge poor harvests or unavoidable defects ot certain important goods..... We have to make an effort in order to increase productivity in all sectors during next year. We must use our available resources of labour, skills, knowledge and technique as well as our production factors to the last. We must reach.... higher yields per hectare. (Nyerere, J. K., 1975, translation from a German version mine)

While economic consideration are not everything in current development concepts, they retain priority. This is only too clear as long as one of the main aims of development is to get rid of poverty. Thus, a concept of particular relevance to Africa, the concept of integrated rural development, puts poverty at the very centre:

> The term integrated rural development denotes a concept which aims at the elimination of poverty in rural areas of developing countries. The concept emphasises in particular that poverty can be eliminated only through an integrated attack on the various factors jointly producing it. (Schonherr et al., 1977, p.9)

This concept, advocated by the World Bank over the last years, emphasises two important aspects - self help and participation. Even more than previous development strategies, it can reach its goal only by mobilizing the rural poor for the simple reason that a pure outside intervention would be much too costly since it would have to raise the standard of living of between 50 and 70 per cent of a country's population. In order to mobilise the rural population for self-help, one will have to permit popular participation at all levels of such a project of integrated rural development. Participation is important in its own right, since it is one aspect of grass-root democracy - the exercise of basic political rights.

But it is important also as an instrument, since only full participation will motivate people to contribute to development efforts in their areas.

Let us put together the elements of a definition of development contained in the various definitions offered so far, and summarize:

1. The overall aim of development is to fulfill man's basic needs this means in many countries to eliminate the worst poverty, especially in rural areas. This can only be achieved through economic growth based on a sound, i.e. diversified economic structure.
2. In the process of development, a society must remain true to itself. If large segments of the population feel that their historical and cultural identity is in danger of getting lost, they will resist development programmes.
3. Therefore, the concrete development goals and the procedures to reach these goals must be defined within a given society. Such definition needs a broader basis than the planners' officer right at the top of the administrative hierarchy. Ideally, there should be aproject of the future society which wins broad assent. External sources (e.g. the Declaration of Human Rights) must only serve as one reference among others.
4. Resources for the development effort are internal resources to a very large extent.
5. Participation plays an important part in any development strategy as a way of exercising the rights of citizenship in an endeavour which will have great consequences in the future, and as a means to mobilise internal resources.
6. With the economy being the leading sector in development there is the need to cope with necessary adjustments in other parts of the social system of a country. There are changes in skill requirements, in the division of labour, in patterns and foundations of authority, in land tenure, in settlement patterns, in the supply of innovations,

in the income distribution, to name but the sectors most obviously connected with the economy. Unless conscious adjustments are made when necessary, conflicts will build up around these areas.

This last point is made forcefully by many authors. Here are just two quotations:

> Development is not only characterised by the growth of proction and income, it is also closely linked to and necessitates the evolution and transformation of economic and social structures. (UNESCO, 1974, p. 11)

> ....without simultaneous social change nothing will be developed. Change and development is closely integrated social systems (as most rural communities are) is only possible, by chaning social values, norms, attitudes,interpersonal relations,work habits, beliefs etc. (Metzger, U., 1978, p.10)

Our question now becomes: What is the linkage between formal education as defined above and a society's development effort. In which fields - economic, social, political, cultural - is education most helpful? In what respect is the development of education itself part of the total development effort, e.g. in the fields of cultural development? Is the link between development and education the same for each level of education?

3. <u>The relationship between education and development</u>

Most authors deal with the relation between education on the one hand, economic development or economic growth on the other. This is due to the spectacular development of Economic of Education as a science in the sixties and to its immediate practical application in educational planning. The links between education and other areas of development have received much less systematic thought although they have not been left out. We shall therefore make brief mention but shall concentrate on the economy.

We shal discuss the relationship with economic development on two levels, the micro-level and the macro-level, as the economists call them.

The micro-level deals with actions and decisions of individuals in the field of economics. At this level overall economic development gets a bit out of sight and is replaced by considerations of individual welfare andprofit. An individual can meake economically sound decisions which promote his self-interest and make him rich while the economy at large is stagnant or regressing. Yet, it is individuals who make economic decisions, and if it can be shown that many individuals make economically reasonable decisions,i.e. decisions yielding income, when speaking resources on education, be it their own or that of their children, this can only work out if the economy as a whole a premium on education. Thus, there is a link between the economic success of the of the 'ordinary' individual, the man in the street, and overall economic development.

The macro-level deals with economic processes and results at regional, mostly national level. Here, the results of all individual decisions and actions are lumped together under the well-known categories as for example consumption, investment, savings, liquidity, capital stock etc., and the relationships between the aggregate factors are studied. It is at this level that growth rates are defined, that one would speak of structural changes and of development. Often, the macro-level is subdivided into relatively homogeneous sectors, thus, production may be subdivided into agriculture, industry, and the service sector, each of them may in turn be subdivided according to branches of activity. Macro-level analysis has the advantage of dealing with economy as a total system and reveals trends over time. It yields a total picture made up of a limited number of key variables and permits relatively quick orientation.

But it does not uncover the mechanisms of decision-making and acting that produce the aggregate results. What motivates people to act as shown in the aggregate statistics made in micro-level analysis.

Since the economics of education owe much of their early vigour to micro-level observations we shall start at this level in order to proceed to micro-level considerations.

3.1. Education and the Gross National Product

A number of observations, some plain common sense, some using highly sophisticated statistical techniques seem to establish a close link between the total output of an economy and the amount of education and training embodied in a country's population. Moreover, many people tend to believe that education is as much as a factor of production as physical capital in the form of machinery and infra-structure. If it is left out, the total economic output will suffer. This is what SCHULTZ means when he says:

> I have been impressed by repeatedly expressed judgements, especially by those who have a responsibility in making capital available to poor countries, about the low rate at which these countries can absorb additional capital.

BOWLES only adduces further evidence:

> The capacity of the postwar German and Japanese economies to absorb large quantities of physical capital at high levels of productivity when contrasted to the apparently limited absorptive capacity of the poor countries shed further doubt on the adequacy of existing approaches to growth. (Bowles, 1969, p.3)

Both authors think that even if more capital was available to developing countries, it could not be utilized profitably for want of well-trained and experienced labour at all levels.

There have been two approaches to establish the contribution of education to economic growth the correlation approach and the residual factor approach, and one major attempt at putting the apparent findings into practice, the manpower planning approach. We shall take them up in turn.

3.1.1. The correlation between GNP and education

Looking at diagrams such as diagram 1 and 2 one impresses by the neatness of the association between national income figures and one or the other index of educational activity. Results are far from identical, but they all show a strong positive relationship between education and national income.

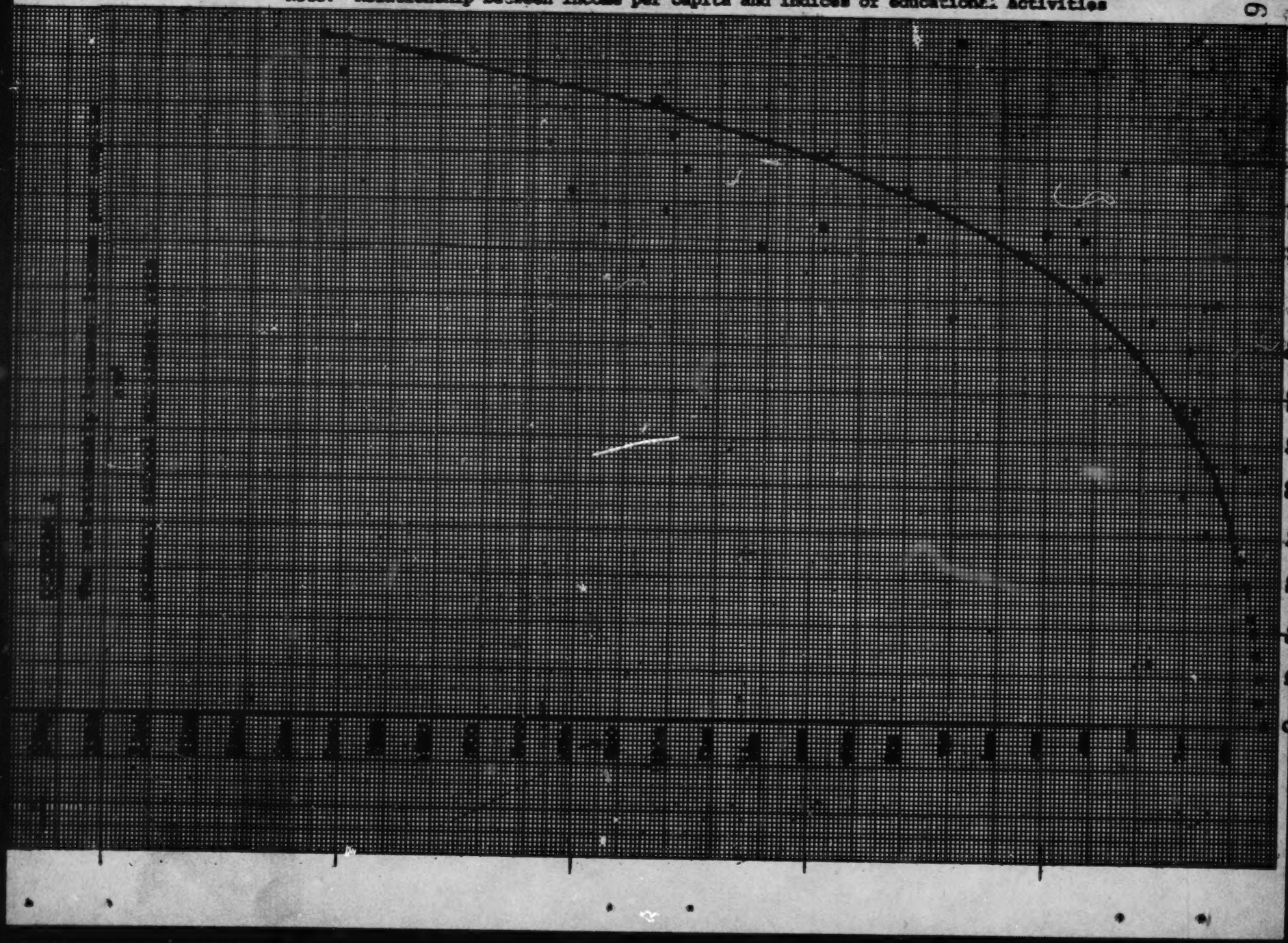
Existing calculations give very diverse results, depending on the methods used. The report on The World Social Situation prepared in 1961 by the United Nations, shows a clear relationship between the combined rate of primary and secondary school enrolment and various economic indicators - GNP (0.84), consumption of energy (0.76), manpower distribution (0.81) - on the other.

For a sample of 19 Latin American countries in 1960, results

Show a considerable difference, depending on whether the subject is the promotion of literacy, primary education or secondary education, the interrelationship with GNP is
0.41 for literacy
0.46 for primary education and
0.61 for secondary education, (the ratios rising....to
0.62 (for literacy, H.B.)
0.54 (for primary education H.B.) and
0.85 (for secondary education, H.B.) if we omit Venezuela, where oil resources create a special situation). Claculations made by M.J. Bowman and C.A. Anderson for 55 countries give a relationship of 0.432 between the rate for promotion of literacy and the GNP logarithm. (UNESCO, 1970, p.101)

Svennilson, Edding, and Elvin have correlated enrolment ratios and GNP per capita, and have found that there is indeed a positive relationship, although there is also considerable middle range. (Bowen, W. G., 1968, p. 68)

Note: Relationship between income per capita and indices of educational activities



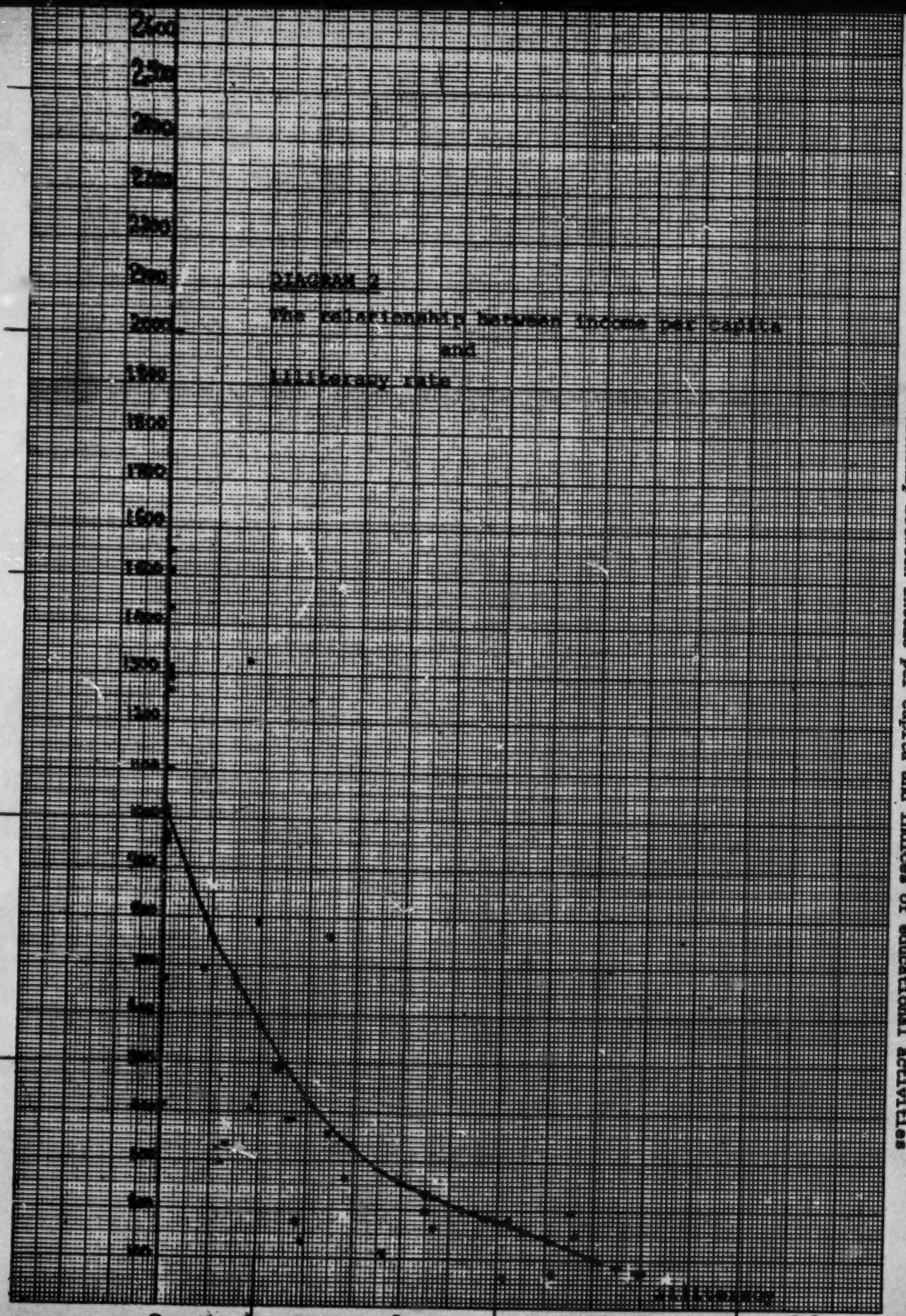


DIAGRAM 2

The relationship between income per capita and illiteracy rate

Note: Relationship between income per capita and indices of educational activities

Diagrams 3 a, b, and c

relationship between annual earnings, education and age for the United States, India, and Greece

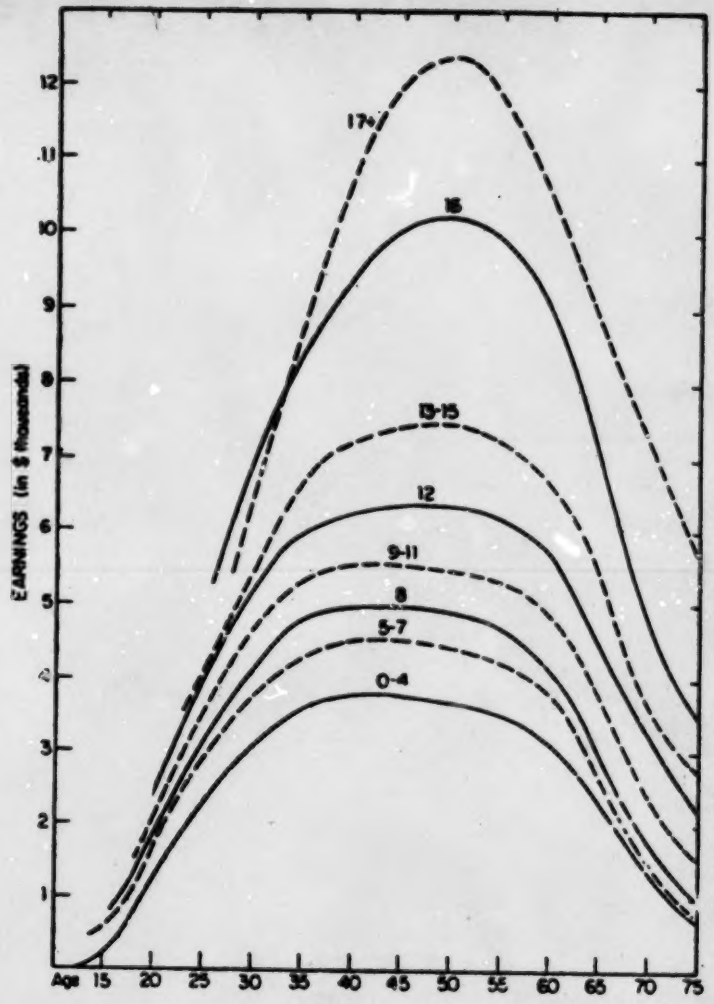


diagram 3 a Estimated Annual Earnings by Age and Schooling: U.S., North, White

Source: Giora Hanoch, "Personal Earnings and Investment in Schooling," unpublished doctoral dissertation, University of Chicago, August 1965.

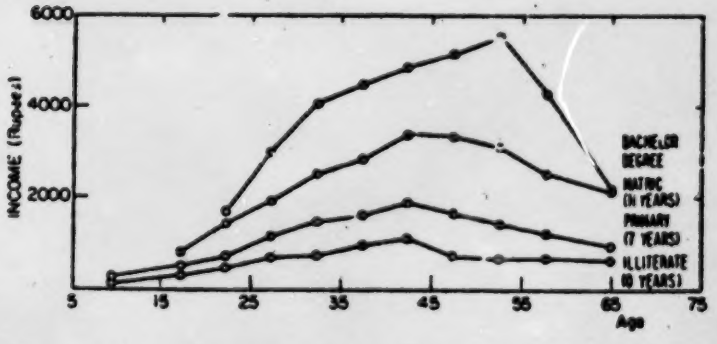


diagram 3 b Estimated Annual Income of Indian Urban Males by Age and Schooling, 1961

Source: A. M. Nalla Gounden, unpublished doctoral dissertation, Kurukshetra University, 1965, p. 69.

Note: Curves on diagram 3a represent amount of formal education received in number of years

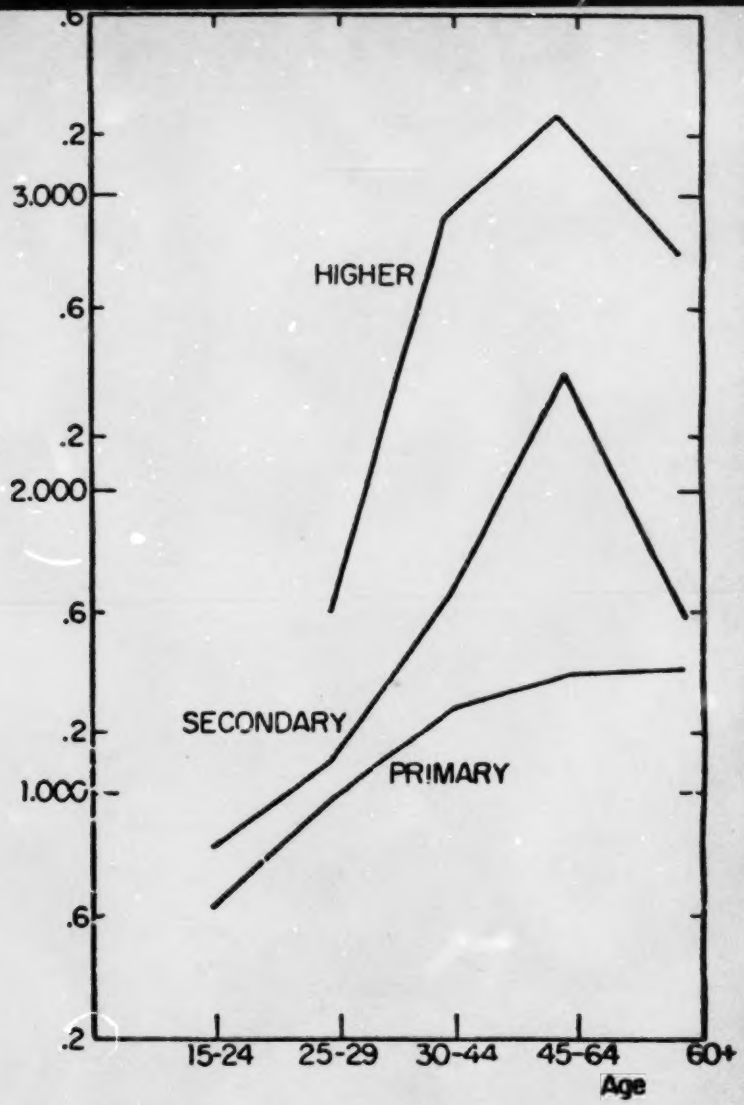
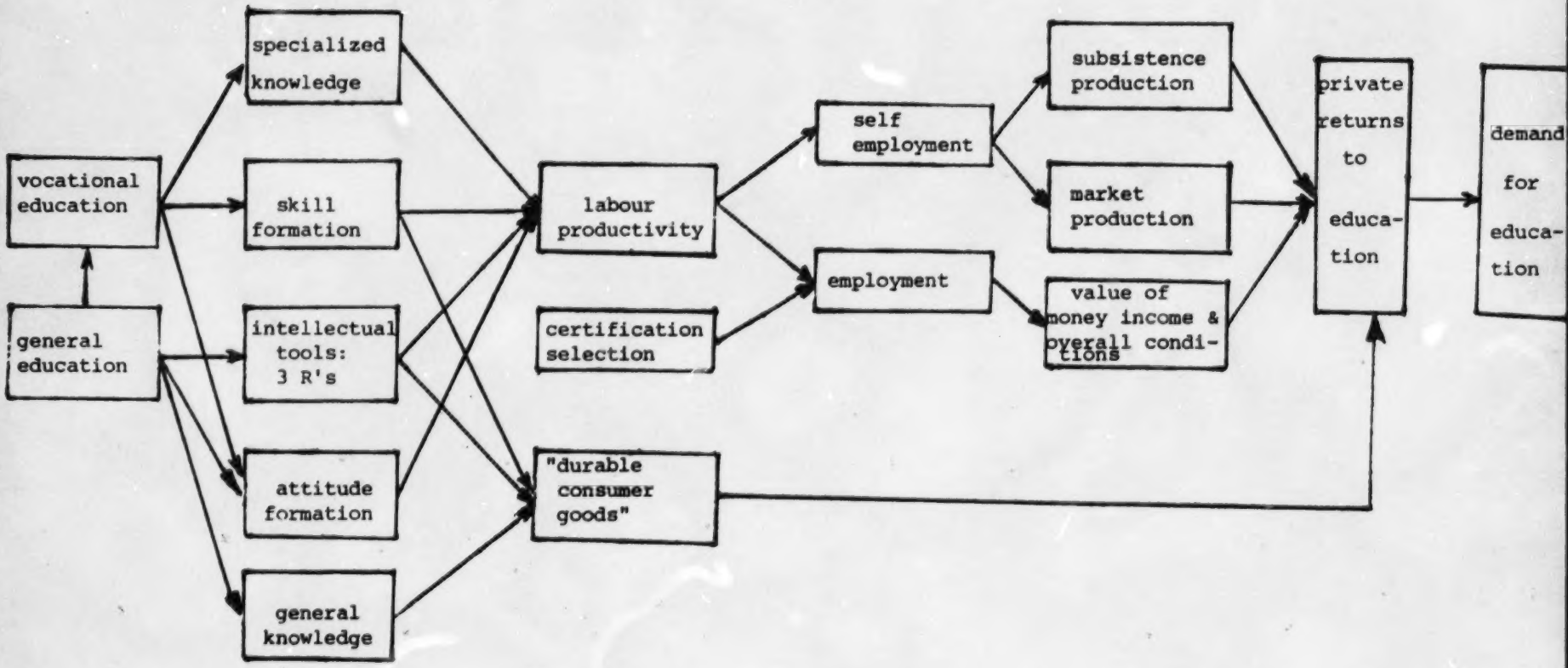


diagram 3c Annual Earnings by Age and Education as a Fraction of the Earnings of Primary School Graduates Aged 25-29: Greece, 1964

Source: Earnings of males by age group were computed from the raw individual data in a sample of 2,082 workers in the Athens area. These data were collected as a part of a survey directed by Harvey Leibenstein. (See Chap. V.)

DIAGRAM 4: The Economic effects of education



There is no doubt that there is a relationship between an economy's output and its educational system. But the nature of this relation is not clear. This is due to the limited analytical power of the correlation coefficient. All it is says is: If a country A has a higher income per capita than country B, then it will also have a higher primary school enrolment than country B.

The source for the data used in the diagram is Wolff, Jurgen H: Bildungsplanung fur Entwicklungslander-Ein Modell und seine Anwendung auf den Kongo-Kinshasa (Educational Planning for Developing Countries - a Model and its Application to Congo-Kinshasa). Bertlfesmann Universitatsverlag, Bielefeld 1969. It draws on data from 1960/61, for two countries were used since they are the only ones for which data on 38 relevant indicators were available. The author relies on official national census figures, the United Nations Organisation Demographic Yearbook, the United Nations Organisation Yearbooks, and the UNESCO Statistical Yearbooks, i.e. the best and most reliable source of data available at that time.

The association is usually measured by the coefficient of correlation, r, (see the course on evaluation and research techniques). The maximum value of + 1.0 denotes complete positive association: the higher the national income, the more education. A value equal or very close to zero means lack of association, no linkage, and the maximum value of -1.0 denotes complete negative association: the higher the national income, the lower the rate of illiteracy.

Diagram 1 shows the relation between income per capita and the rate of primary school enrolment. These variables are defined as follows:

1. Income per capita is GNP (Gross National Product) divided by the number of a country's inhabitants. For the sake of comparability, national figures were converted to US dollars.

2. Rate of primary school enrolment usually is a ratio setting the number of pupils in primary school against the number of children in the respective age groups.

   Let a_1 be the number of pupils attending primary school in country 1

   Let b_1 be the number of children within the age limits specified for primary school enrolment in country 1.

   Then $c_1 = \frac{a_1}{b_1} \times 100$: this is the rate of primary school enrolment in country 1.

This rate can vary between 0 with no primary schooling at all and 100 with all children of primary age enrolled. VAlues reproted in diagram 1 exceed 100 and go up to 145. This does not seem to make such sense, at first sights. It means that there are more pupils in primary school than there are children in the corresponding age brackets. Of course this is not the case. The reason is that an attempt at international comparison has been made. In order to make the different countries' efforts in primary education comparable a minimum duration of primary school - 6 years - was used for all countries. The actual primary enrolment was set against the number of children aged 6-11 years. How this procedures affects the rate of primary school enrolment can be seen in the following table:

Calculation of the Primary School enrolment rate referring to the different standards (model calculations)

C O U N T R Y

Variable	1	2	3	4
Duration of Primary School	6 yrs	6 yrs.	8 yrs.	8 yrs.
Normal entry age & School leaving age	6-11	6-11	6-13	6-13
No. of children of Primary School age	6 mil.	6 mil.	8 mil.	8 mil.
Actual enrolment	4 mil.	6 mil.	6 mil.	8 mil.
National rate of Primary School enrolment	66.7	100	75	100
No. of children aged between 6 and 11 yrs.	6 mil.	6 mil.	6 mil.	6 mil.
International rate of Primary School	66.7	100	100	133.3

The table assumes four countries with identical populations, as far size and age distribution are concerned. To simplify matters it has been assumed that there are 1,000,000 children in each of the years of the primarx school cycle. Countries 2 and 4 achieve universal primax education by their own standards, the national rate of enrolment is 100, whereas countries 1 and 3 do not.

Using a standard six-year cycle as a uniform reference we obtain for countries 2 and 3 an identical enrolment rate of 100 and for country 4 an enrolment rate higher than 100. This is justified:

if we assume that the share of education in total expenditure is the higher the longer the duration of primary school and the more pupils have enrolled. Under this assumption the international rate of primary school enrolment used in diagram 1 compares countries according to their relative effort in the field of primary education.

Diagram 2 uses the Illiteracy rate and sets it against GNP per capita.

(3) Illiteracy rate is the proportion of people aged 15 and above that is illiterate, set against the total population aged 15 and above. While primary school enrolement rates measure current educational efforts, the illiteracy rate reflects in the past and is an information about present levels of education and training in the labour force. Its casual link is therefore easier to grasp than that of primary school enrolment.

Diagram 1:

coefficient of correlation: $r = 0.8326$
coefficient of determination $r^2 = 0.6932$
regression: $y^1 = 0.436 + 0.2886\ x$
where y' is the estimate of the natural logarithm of income per capita
and x is the observed value of the primary school enrolment rate.

Diagram 2:

coefficient of correlation : $r = 0.8407$
coefficient of determination $r^2 = 0.7068$
regression: $y' = 6.928 = -0.02825\ x$
where y' is defined as in diagram:
and x is the observed vlaue of the illiteracy rate.

that country A has a higher income than country B because it has a higher primary school enrolment nor that it has a higher primary school enrolment because it has a higher income per capita and can therefore afford more schools. One would need additional information to decide between these possible interpretations.

> A positive correlation can be viewed as evidence in support of the proposition that spending money on education is an important way of raising a country's GNP. But the same correlation can also be viewed as evidence in support of the proposition that education is an important consumer good on which countries elect to spend more as their GNP rises. The trouble is that these propositions are almost certainly both true to some extent - and, in the absence of other information, we have no way of disentangling the two relationships. (Bowen,W.G., 1968, p. 70)

A close look at diagrams 1 and 2 will help to make all this a little clearer. For an exact definition of the variables used to see the note going with the diagrams.

Diagram 1 is a graph with 36 countries plotted according to primary school enrolment rate and income per head. This "scattergram" is supplemented by a regression curve showing the central tendency of the set of dots with a remarkable goodness of fit. The coefficient of correlation is 0.83 which is very high, indeed. Since a regression curve must not be extrapolated beyond the range of actual data, it is shown as a dotted line below an enrolement rate of 38 and above a rate of 145. The substantial interpretation of the curve would be the following, according to the hypothesis chosen:

Hypothesis 1: Education has a casual influence on the output of an economy.

> That education should be a factor of social and cultural development has always been accepted... The impact of the education factor:... it is generally accepted that it plays a role in the productivity of a person or a country.. estimated at between 30 to 60%. (Ministry of National Education, Cameroon, 1973, p.5/6)

A study on educational planning argues this hypothesis like this:

> An economy made up entirely of illiterates ... could not get past a very modest level of income even if capital and labour were available in unlimited amounts. This proves that the factor 'education' contributes to growth, and that this contribution can be isolated and identified, in principle. (Wolff, J.H., 1969, p.37, translation mine)

The diagram yields the following results:
The effect of schooling on income per capita is positive. But this is not uniformly so over the whole range of enrolement rates and incomes. At a low level of income and enrolment a given increase in enrolment induces much less growth in income per head than at a higher level. An increase in enrolment of 10 points from 60 to 70 points "yields" an additional income per capita of 58.70 US-dollars, raising it from 175.40 to 234.10 dollars. The same increase of an additional income of 248.30 US-dollars, more than four times the amount realized at the previous level.

The conclusion would be to invest heavily in education especially at low levels of per capita income in order soon to reach income levels from which further expansion of primary education yields increasingly higher income.

Hypothesis 2: Income per capita has a direct incidence on rate primary school enrolment.

This hypothesis seems to be backed by some evidence, e.g.

> ....income position in the 1930s explained enrolment rates in the 1950s better than schooling in the 1930s explained income in the 1950s (Bowman M.J., 1968, p.125).

Since in this study the time factor is explicitly included in a multiple regression analysis, this is a very strong argument. But apart from evidence there are some theortitical reasons why education be the effect rather than the cause of economic development:

> On the other hand direct observation of our economy shows part of the education (most of the education of woman, for that) to have non-economic reasons. This "education as consumption" obsviously depends on given levels of income.
> (Wolff, 1969, p. 37, translation mine)

> The development of general education in the United States and Europe may be due in a large part to the rapid rate of economic and social change, which renders it increasingly difficult to provide adequate socialization and occupational training for youth in the traditional family - , church - and apprenticeship systems of education. (Bowles, S.1969, p.4/5).

Under this hypothesis, the effect of income on schooling is positive but now unformly so over the whole range of the two variables. Starting from low levels of income per capita, a given increase in income induces a large increase in school enrolment. The same absolute amount of growth in income per capita pushes the enrolment rate much less further when taking place at a higher level. Thus, when income grows from 100 to 200 United States dollar, the enrolment rate changes from 40.5 to 64.5, which means a difference of 24 points. However, when the income grows from 1.100 US Dollars to 1.200 US Dollars, the enrolment rate changes from 123.6 to 126.6 which leaves us with a difference of only 3 points for the same absolute change in income per capita.

The conclusion now seems to be that education tends to increase fast at low levels of economic development in order to slow down as income continue to grow and to eventually come to a standstill when per capita income reaches 4.000 US Dollars. This is obviously the case since primary school enrolment is bound to have an upper limit no matter what the income over capita is.

This is not unanimously agreed, however, WOLFF refers to an article by McClelland, D.C., Does Education Accelerate Economic Growth? In: Economic Development and Cultural Change, Vol. XIV, 1966, p.257-278, and says, "The only study known so far which in fact takes the necessary "lags" into account finds beyond any doubt that economic growth is closely linked to previous educational efforts." (Wolf, 1969, p. 39, translation mine)

Before leaving this topic, a final word of caution seems necessary. Most results in the correlation studies reported have been achieved using cross-sectional data, i.e. data from countries at various levels of economic development but at the same point in time. Yet, results are being interpreted as if belonging to a historical sequence, a time-series. Such a procedure has severe methodological limitations. Also, they are derived from a comparison in which the units compared are whole nations. They do not take into account the incidence of different economic and social structures on the relationship between between education and economic development. The mecamecanisms by which education and training contribute finally to the production of goods and services might be entirely different in a highly industrialised country and in a country where 80 per cent of the population is engaged in agriculture.

3.1.2. The Residual Factor

Another approach to estimate the contribution of education to economic development is directly involved with the theory of economic growth.

> In general terms, this approach consists of taking the total increase in economic output of a country over a given period of time, identifying as much of the total increase as possible with measurable inputs (capital and labour being the two measurable inputs usually chosen) and then saying that the residual is attributable to the unspecified inputs. It is because education and advances in knowledge are usually regarded as the most important of the unspecified inputs that this approach deserves to be discussed in the context of the contribution-of-education question. (Bowen, W.G., 1968, p.73/74)

In other words, one looks at the total growth rate of an economy. Comparing this with rates of capital and labour inputs (in money terms) one finds, that the latter growth rates are smaller than the growth rate of total output and cannot therefore explain the observed growth. There is a residual factor, and education and training are suspected to be part of that redisual. As BOWEN puts it:

> The more general difficulty is.... the 'residual' nature of the 'residual'.... the residual embodies the results of some secular improvement in the quality of capital assets, it also ecompasses changes in output attributable to economies of scale, to improvements in the health of the labour force, to informal as well as formal education, to changes in the product mix, to reorganisations of the economic order.... The heterogeneity of the elements that go to make up the residual means.... that a large residual cannot safely be interpreted as a mandate for more spending on any particular project, whether it be a massive research and development effort or better school lunches. (Bowen, W.G., 1968, p.76/77)

There have been attempts, however, at singling out the contribution of education to growth. For the United States of America there are estimates that roughly 20 per cent of the growth over a period of thirty years was due to increases in the educational level of the labour force. Similar results have been calculated for many Western European countries. (Bowles, S., 1969, p. 4).

3.1.3. The manpower approach

There is a very common-sense, down-to-earth approach to the link between education and economic development which has become known as manpower planning or manpower budgeting. Putting aside the question as to what causes what is yet another version of the chicken-and-egg problem, it starts from a few simple considerations:

A country plans to process its crop of groundnuts instead of exporting them as raw material. It plans to build an additional 2.000km of arred roads and to maintain a network of 5.000km tarred roads and 10.000km of untarred roads. It w uld like to man all the top jobs in its administration with national and to pand administration globally by 5 per cent a year. It also wants to ensure a health service providing one medical doctor to 10.000 inhabitants, and it wants to push primary school enrolment from 50 to 70 per cent over

a period of three years with classes not exceeding 50 pupils. All these projects require personnel to carry them out.

Given a certain technology of groundnut processing, a crop of a certain size will require an industrial labour force of a certain size, complete with unskilled, semi-skilled and skilled labour in the factories, supervisory personnel, to p level management, clerical staff, and scientific personnel for quality control, research and development. The road construction targets will require road engineers, road supervisorys, drivers, and personnel for maintenance and repairs at different skill levels, finally unskilled labour for a number of simple jobs. Running and expanding the civil service means a certain number of people with well specified qualifications according to the entry requirements at the respective levels and posts in the administrative hierarchy. The target in the health service requires a specified number of trained medical doctors and auxiliary staff depending on population size. The target in the educational field can only be achieved if a certain number of teachers of various grades are trained and recruited, spreas over the palnning period.

Conditions if this nature are familiar to most African countries. The problem of manpower planning now is: How can one get the necessary personnel, how can it get the skills and qualifications required? And it seems quite obvious that long term plans such as these must have an incidence on the size and structure of the educational system. Many institutions for vocational training specify entrance requirements in terms of years of general education and certificates, and many jobs, while not requiring any specialised training, recruit only at or above given levels of general education. Thus there seems to exist a link between planned output of a country's economy in terms of goods and services, qualifications and skills needed to produce such output,provisions for vocational training and, preparing for the latter, provisions for general education at primary and secondary level.

The history of education in Africa bears witness to the manpower planning approach:

- early education was meant to provide auxiliary staff for the colonial adminstration. Famous examples are the 'ecoles de fils de chefs" - schools for the sons of chiefs who were to work within the frame work of territorial administration.

> The ducation provided by the colonial government was not designed to prepare young people for the service of their own country, instead, it was motivated by a desire to inculculate the values of the colonial society and to train individuals for the service of the colonial state.
> (Nyerere, J.K., 1975, p.524, emphasis mine)

At independence, many posts filled by expatriates had to be taken over by nationals. Since administrative services kept being modelled on the pattern of former colonial powers, the number of people needed and their qualifications were relatively well known.

- The administration frew fast in most countries. This is due to a number of reasons:
  (a) The centres of fromal decision-making and power shifted to the new states. Functions formerly provided in the metropolitan country had to be assumed by the new state.
  (b) The state took up a leading role in development. This meant new ministries, new departments in the existing minstries and an increasing staff in existing departments.
  (c) A strong pressure for admission into administrative jobs built up. These jobs were perceived as ideal, they provided a stable relatively high income with opportunities for further fringe benefits, they took part in the exercise of power and were regarded as clean and easy.

Again, since the expansion of administration took place, within the pre-established system, it was relatively easy to know the number of additional people and their qualifications.

- There are still manpower shortages as can be seen from the still widespread employment of expartriates. But this problem sseems to be on its way out:

> "As recently as the early sixties there was a great concern about the shortage of educated manpower to fill crucial economic and governmental needs in the newly independent nations. These shortages were very real. But faster than most manpower experts expected, educational systems have been catching up with these manpower shortages. (Beeby, C.E., ed., 1969, p.21)

The most recent case of an educational reform motivated in part by manpower considerations is to be seen in Rwanda. In an all-out effort to adapt the educational system from primary level to university level to the needs of the country, secondary education is going to be vocationalised. All secondary school students will receive vocational training right from the outset so that on completion of secondary school they can take up employment or become self-employed, without any further specialised training. This is explicitly justified by the lack of middle-level manpower in administration, industry,and agriculture. A projection of manpower demand into the next five years seems to have shown that the reformed system will just about cope with the needs of prospective employers.

While there seems to be a clear need for manpower planning the method presents a number of problems when applied to planning the total educational sector of a society. This becomes evident when looking at the method in some more detail:

> The essential ingedients of detailed manpower plans in all of their variants are: (1) specification of the composition of manpower 'needs' or 'requirements' at some future date (or, less often, sequence of dates),

(2) specification fo manpower availabilities, which includes estimation of losses (by retirement and death) on the one hand, flows of new manpower out of educational institutions on the other, (3) a reconciliation of (1) and (2). (Anderson and Bowman, 1969, p 363/364.

..... manpower forecasts that underlie educational planning are not so much predictions of what will happen in the manpower fields as indications of what must happen if certain targets for economic growth are to be realised.... manpower forecasting for educational purposes must.... have medium to long time horizons. (Anderson and Bowman, 1968, p. 365).

The longer the time horizon, however, the more difficult it becomes to forecast economic development with sufficient accuracy. The reasons are the incidence of unpredictable technological change and the restructuring of economies owing to changing prices of raw materials and changing international relations.

(a) The longer one plans ahead, the more one would have to expect technological change which emphasises skills different from present requirements.

(A recent self-assessment from the Soviet Union)

reports that there is comparatively little difficult in projecting manpower requirements in the service industries or in estimating replacement requirements in productive industries. There has been almost no success in projecting changes in skill requirements in the same production industries. (Anderson and Bowman, 1968, p. 367/68)

If the country with the longest experience in overall economic planning admits defeat facing the unpredictability of change, this seems in fact to show that manpower planning cannot be the tool to bring education in line with development. Examples such as the computer technology "killing" jobs by the score, making whole ranges of qualifications obsolete, or the incipient shift in energy technology towards renewable sources if energy are only the more spectacular cases, but changes such as these have been characteristic ever since the industrial revolution started.

The restructuring of an economy is an important part of economic development itself, so we had said earlier. Technological change is a major factor making for changes in an economy's structure, but even in the absence of new production technolgies changes in the world markets might require structural adjustments in an economy. The outlines of such changes can be planned but again there are limits. Whether industries serving a country's internal market become profitable and expand, which means that they would need more labour, depends on how the purchasing power if the population develops. Whether a move away from an agricultural monoculture is a successful depends on how well the farming population responds to a new range of crops. This in turn will determine the need for agricultural extension and marketing services. How well a country's new export factors beyond its control, e.g. competing goods, substitutes, price fluctuations. This in in turn will influence employment prospects and therefore skill requirements in these lines of production. Because of the inherent difficulties in manpower forecasting, a paradoxical situation arises:

> The less-developed countries, it is said, have the greatest need of manpower planning. But it is acknowledged that manpower planning is especially difficult in such economies because of the .... rapid and unpredictable rate if change in manpower requirements. Obviously, one cannot extrapolate forecasts in those countries..... the pace of change in manpower requirements must indeed be both rapid and irregular if economic growth is to be significant..... (Anderson and Bowman, 1968, p. 369)

BLAUG reckons that manpower forecasts could be reasonably accurate up to 3 to 5 years into the future. This is too short a time for substantial changes in the educational system. since educational systems take long to adapt and changes in manpower

requirements are difficult ro predict anyway one might well wonder how countries so far have been coping with continous change. Put in another way - is manpower planning for the economy as a whole perhaps not all that necessary in order to ensure a sufficient supply of skilled labour? In his investigation of the problem BOWLES comes to the following conclusions:

.....within a given country the distribution of workers by level of schooling within a single occupation shows a wide variation, ... any measure of central tendency in the distribution of workers by eyars of schooling in a given occupation shows major differences among the countries for which data are available. (Bowles, S., 1969 p. 53)

Thus, for many occupations there is no uniform educational standard within one and the same country. This can only mean that the specific skills required for a given occupation can be developed regardless of the amount of formal education received. One might object that this has purely accidental reasons and that the average level of formal education for each occupation points to a desirable standard, so that sooner or later lower qualifications would be rejected. But international comparison reported by BOWLES invalidates this argument. Mean levels of formal education for a given occupation vary between countries. One cannot but agree, therefore when he finds:

> The level of schooling of the work force performing a given task is in general the result of an economic choice and is not technologically determined by the nature of the job itself.
> (Bowles, S., 1969, p. 52).

The explanation is again relatively simple, most practical skills can be acquired in a variety of ways. They can be learned on the job when there is no provision for vocational training, and most formal vocational education requires hardly more than a modest mastery of the three R's as a condition for successful learning. In the words of BOWLES:

> The most improtant substitute for formal education in most jobs is ... experience. The degree of substitutability between job experience and formal education.... varies from skill to skill. However, for a number of skills, the data suggest that the relationship is highly elastic. (Bowles, S., 1969, p. 50)

This might help to explain another puzzling finding got in a different contest:

> ....an apparent threshold effect of something like 40 per cent adult literacy, as a necessary but not sufficient condition economic emergence.... (Bowman, M.J., 1968, p. 125).

Such a relatively small proportion of literates would be enough to enable the - small - labour force to acquire whatever skills are needed for the start of economic development. European historical evidence would tend to support this.

There are a few further hints about the required dimenstions of the educational system:

> Many countries have made manpwer studies assessing their needs for high-level skills. Using rough bench marks, African countries show a need for about w0 per cent of the age cohort to be receiving secondary education at the age of 16, and about one per cent to be receiving higher education at about 21..... tehse figures are subject to the important qualification that absorptive capacity is not a fixed concept. (Lewis, W.A., 1969, p. 76/77).

Another drawback is that the manpower planning approach would not provide any reason for education and training of the farming population unless highly sophisticated farming along Northern American or European lines is envisaged. It is geared to the skill requirements of the modern sector of the economy, of government services and communication systems but takes all economic activities in the traditional part of the economy for granted (since manpower experts usually are expatriates, they don't know that sector and its potential for development very well).

The International Commission on the Development of Education (at UNESCO) dismiss the manpower planning approach that had enjoyed so much popularity, in these terms:

> Drafting a graph of correlations betweeen the levels of general education and professional activities would, indeed, be a thorny undertaking: in a changing economy, we have few means of forecasting, with any certainity: the number and nature of jobs likely to become available: few means of setting tehse against specific prefessional qualifications, and even fewer when we come to deal with economies on the point of being launched into development. (Faure at al., 1972, p XXXI)

Their recommendation is to stop veiwing education narrowly as an investment only:

> ....the commission has suggested that.... any attempt to slow down educational development be excluded from educational policies and strategies..... The aim of education is to enable man to be himself, to 'become himself.' And the aim of education in relation to employment and economic progress should be not so much to prepare young people and adults for a specific, lifetime vocation, as to 'optimize' mobility among the professions and afford a permanent stimulus to the desire to learn and to train oneself. (Faure et al., 1972, p. xxxxi/xxxii)

May we at the close of this section refer back to LEWIS' remarks about the beneficial effect of 'overproduction' of skills at all levels on productivity?

3.2. Education and Individual Income - the micro-level analysis

The preceding discussion has brought out a number of interesting facts but has left many issues unresolved, many questions unanswered. It is hoped that turning to the micro-level will provide a few more insights about the contribution of education to economic development, especially after it hs become clear that many assumptions of the manpower approach are either unfounded or practicable.

2.1. The evidence

Apart from the observed correlation between national income figures and educational activities anotner relationship has retained the attention of theose who studied the link between education and the economy, the effect of education on personal earnings.

> This is the major private economic effect of schooling, and the only one which is susceptible to a reasonable degree of accruarcy in estimation. (Bowles, 1969, p. 12)

The findings can be summarised in this way:

> ....between any two groups of individuals of the same age and sex, the group with more education of whatever kind will have higher average earnings from employment than the group with less, even if the two groups are employed in the same occupational category in the same industry. (Blaug,M. 1974, p. 27)

The following diagrams, all taken from BOWLES, 1969, visualise this relation for the United States, India and Greece. While they use different ways of grouping, results are substantially the same. How these differences in income can be related to overall economic development can be seen from the follwing statement which brings the concept of 'national productivity orientation' into play:

> The national productivity orientation' consists of looking at education-related earnings differentials as partial evidence of the effects of education on the output of the country, and is based on the premise that in a market economy differences in earnings reflect differences in productivity. This orientation is relevant to the question of whether society as a whole is investing the right share of its resources in education. (Bowen, W.C., 1968, p. 78)

If one compares earnings due to education and cost incurred while getting educated one will arrive at the rate if return to education in the same was as one would calculate the rate of return to investments in buildings or machines. The results seem to make a strong case for education.

> Another approach has attempted to estimate the returns in the form of higher earnings to the educated in realtion to expenditure on their education in the U.S.A..... these approaches and others have seemed to show that the returns to physical investment. (Balogh, T., and P.P. Streeten, 1968, p.358).

3.2.2. <u>The reasons behind the returns to education</u>

Given that people having received different amounts of formal education differ so much in productivity that employers pay them different salaries, what is it that makes for higher productivity? If we can identify it,would it be of value for employment only or would it be valuable for self-employment, too? This is of some importance since the studies on which we base our arguments have been made in economies where most people take

up wage employment. But in African context with its notoriously small proportion of modern type employment most school leavers, at least primary school leavers, will work as self-employed farmers, traders, and craftsemen.

Again, there has been some controversy on the educational causes of labour productivity. We would therefore propose to have a look at diagram 4. It will be used to structure our discussion. The effects of schooling on productivity, on income, and from there on the demand for schooling are visualised.

For our discussion it is necessary to keep general education and formal vocational training separate. Since they impart different types of skill there is no pint in lumping them together as a global variable 'years fo fromal education.'

Findings reported earlier suggest that primary education enhances aperson's productivity because it teaches the three R's. (see the 'threshhold effect' of 40 per cent adult literacy mentioned by BOWMAN). Other skills and habits of amore general nature are also said to be acquired in primary school:

> To say nothing of the basic attainments (the three R's....) required in every present day occupation, it is....obvious that it is as, and indeed more, important for holding any position to have had a general education, to have learnt to be methodical and accurate to be accustomed to adopting a rational and critical attitude to things and an imaginative approach to technology and economics, to have acquired a feeling for teamwork, etc. than merely to have the knowledge and skills necessary for than particular position. (UNESCO, 1970, p.87)

Other authors are much less affirmative about the way in which education promotes productivity:

> Most economists and educators will accept the proposition that education makes some contribution to productivity, few..seek to expalin why this is so. Our knowledge of the relationship between education and productivity is still primitive. I suspect taht the answer lies not in the occupational skills transmitted by the schools, but in the ability of the educational system to equip youth successfully to fill adult roles, occupational or otherwise. This socialization function of education accounts for the greater ability of the educated to cope with their entire environment. Successful performance of a job requires many of the same attitudes that are required for success in all roles: discipline, ability to communicate, and some basic reasoning capabilities..... (Bowles, S. 1969, p. 26).

And the same time author goes to say:

> It may not be an exaggeration to suggest that from the employer's standpoint, the main function of primary education is not to enlighten, or to impart particular job skills, but to teach youth to come on time, to adjust to boring routine, and to take orders from someone outside the family or traditional system of authority.....
>
> Employers are willing to pay higher salaries to well-educated workers not so much for the skills they have learned in school, but for their facility for learning on the job, their ability to adjust to rapidly changing job content, and because of the lower costs of training them.... the economic function of the school is to develop the values and commitments as well as the basic abilities which enhance a worker's trainability and on-the-job learning capacity. (Bowles, S., 1969, p. 27)

This view is shared by M. BLAUG (1974). Taken to its extreme it would mean that the content of teaching hardly matters. What counts is the spcial interaction in school, the typical teacher-pupil interaction with the teacher dominating.

This raises two questions:

- What are the consequences for the various atempts to relate primary and secondary education more directly to work?
- Are these attitudinal and behavioural outcomes desirable for pupils who will not take up employment?

First, general education, whether primary or secondary, does not seem the right occasion to teach vocational skills. People who think to be able to train pupils in such a way that school leavers can take up jobs without further training might well be wrong. This is the more true the younger pupils are. If work-orientated education means that pupils do some manual work in schools which provides ample opportunities for learning, they might learn, in the process, habits of accuracy and discipline at work, habits that are an asset when they take up employment.

In order to answer the second question, one would have to look at the attitudes and habits mentioned in the previous quotations one by one.

Attitudes and habits valuable for somebody in self-employment seem to be:

- the ability to communicate
- basic reasoning capabilities
- learning from experience
- adjusting to changing situations
- be methodical
- be accurate
- have a critical and rational attitude to things,
- have an imaginative approach to technology and economics,
- be able to do team work.

Looking at the average primary school in Africa, especially in those regions where jobs are exceedingly rae, one would wish to express severe doubts as to which of these attitudes and habits are really taught and passed on to children. For a self-employed, the equivalent for learning on the job is learning from his own work experience.

This is not encouraged in schools. Tje source of learning is the teacher. It is true that pupils have to adjust to numerous changes in school - changes of subject matter, changes of activities,of teacher temper etc. But these are all guided changes with the teacher providing all the cues and instructions. Somebody in self-employment would need the skills to detect relevant changes by himself and to determine when and how to adjust. This is hardly trained in primary or secondary schools. The last three attitudes cannot be taught with the present curricula and teaching methods in most of Africa's primary schools. Only such modern approaches to teaching as SEPA encourages enquiry-midedness and teamwork. What present day schools do teach is in fact

- discipline,
- obedience,
- coming in time
- adjusting to boring routine

One ought to be fair to teachers, however. In overcrowded classrooms with very little equipment approaches to teaching that lay less emphasis on these habits would be hard to realise. The behavioural outcomes stressed bh the authors quoted aboe do not seem to be the ones that would help a school leaver to launch himself into self-employment and to help him when he is self-employed. Current curriculum reforms aim at a change in this direction but seem to be extremely difficult to implement. The 'intellectual tools' - the 3 R's -, the acquisition of job specific specialised knowledge and skills in vocational training, and the attitude formation at primary school and during vocational training are the main elements acquired through education that go into an individual's capacity to produce goods and services valuable to others. At the same time they constitute something like a durable consumer good the benefits of which an educated person enjoys directly. Knowledge as such might be enjoyable, reading gives access to literature and to important communications one might miss otherwise.

and skills might be of direct use in everyday life: One does things onself for which otherwise somebody would have had to be paid.

Some authors draw attention to the fact that education might have negative consequences for productivity. Talking about Western traditional education, BALOUGH and STREETEN remark that there is need

> ....for a study of how and how far traditional educational patterns have contributed to the failure of social and economic progress in the past..... whether the attitudes which are hostile to economic progress have been to the result of a specific structure of education (Balogh and Streeten, 1968, p. 391)

BOWLES links such negative attitudes to the problem of school leaver unemployment:

> Negative effects....may be of considerable importance. Education may give rise to attitudes toward manual labour or work in rural areas that introduce rigidities into the labour market and contribute to the problem of the unemployment of educated labour..... (Bowles, 1969, p. 27/28)

As mentioned earlier, the capacity to produce goods and services acquired through general and /or vocational training could be used for self-employment or employment by others for a salary. Usually, it is only in the context of employment that labour productivity is discussed since it is always discussed in relation to wages:

> .....better educated workers earn more because they are more productive, presumably because of the knowledge they have acquired in schools (Blaug, M., 1974, p.28)

The term productivity derives its meaning from the economic theory of the market and of the profit maximizing behaviour of employers:

> ....the term 'productivity' in economics is exactly equivalent to 'scarcity,' Some one is highly productive if he possesses something that is extremely scarce.....

> economists fall back in the final analysis on the assumption of perfect competition to infer unobserved differences in productivity from observed differences in earnings. (Blaug, M., p. 29) and
>
> Employers can choose between school leavers with a general education and those with a technical education, and insofar as they know that they are doing we can deduce from differences in pay how they evaluate the differences in education. (Lewis, W.A., 1969,p.71)

This view is not universally accepted, however. Authors with less faith in the corrective powers of the market point to imperfections as far as salaries and wages are concerned, imperfections in the form of minimum wages, administratively fixed salaries in the whole administrative set up, and unemployment at current wages:

> If anybody attempted to use these models for calculating the returns to education in many underdeveloped countries, he would discover even higher rates of return. All this would show, however, is that pay scales in the civil service, in universities, and in the professions are still governed by traditional standards of a feudal or colonial aristocracy and by natural or artificial restrictions. (Blough and Streeten, 1968, p. 387/388)
>
> ...the scale of salaries in under-developed countries is not freely determined. The government is the largest employer of certain groups and fixes their salary arbitrarily. Neither is the market cleared prices. Claculations based on the average earnings in certain occupations do not justify a larger output if a surplus already exists at current prices. (Lewis, W.A., 1969,p.72)

To the extent that this is true, the only possiblity left in order to assess the contribution of education to economic development dwindles. Economically sound decisions on how to shape the educational system would have been based on rate-of-return calculations, investments going into the part of the educational system promising the highest rates. Thus the capacity of rate-of-return analysis to guide decisions on spending for education depends on how well the labour market operates.

However, coming back to the concept of productivity, defining productivity in terms of the market value of someone's production may sound odd to the non-economist. Common sense would seem to say that someone is productive to the extent that he can produce goods and services no matter what their value in terms if money is.

This point becomes clearer when looking at a farmer. Suppose a woman has received some training in agriculture during Rural Science lessons and practice, and later on in an Home Economic Centre. Being married she is responsible for the food of her family. Using what she has learnt she farms more efficiently than her mother did.

By using erosion control measures, thick mulching improved ways of mixed farming and crop sequence she is able to farm for longer years on the same piece of land before fallowing it. She works with different tools so that farming is less painful. When necessary she can produce more than she usually does. But she feels that the extra money she could make producing food crops for the traders is not worth the extra effort. It would appear that she has become more productive. But although she produces her crops with smaller amounts of inputs - labour and land - she would not have become more productive in the economic sense of the term. Yet it is evident that she could produce more if demand for her products grew and prices would rise enough to provide an incentive for her work.

This made example illustrates very well that education would raise the productivity of a self-employed person in mcuh the same way as that of a labourer. The problem is that productivity cannot be assessed simply by looking at wages. The total income of a woman farming, a man trading, growing cash crops etc. would have to be evaluated. That always includes home consumption and savings on production factors (e.g.

farm land) which have not got a market price yet although they are becoming a scarce resource. And improvements of production factors (e.g. of soil by better soil management) would have to be taken into account, too.

The contribution of education the productivity of the self-employed farmer is at present more of a possibility than a reality. Taking for an example the African school system the author knows best, what does a primary school leaver take home that would be of immediate use when he starts farming?

- He or she will be literate in English. In the typical rural areas of that country, literacy is of little use. There are hardly any newspaper copies available, not to mention public libraries. The agricultural extensions service seems to assume tat the farming population is illiterate, hence there are no extensionleaflets or brochures, no books on farming available. Therefore, the skill acquired during seven years of schooling is not used in many cases is finally lost. The productivity potential built up by schooling is wasted because there is no complementary action outside teh school system.

- He or she will have learnt soem arithmetics. But since arithmetics skills were trained on and applied to problems taken from a strange environment - the towns, Europe, industrial and commercial settings most pupils have difficulties in applyign these skills to <u>their everyday-life</u> problems. There would be applications, however,since most of the market their produce, often through co-operatives, and have to deal with numbers in traditional as well as modern settings (e.g. dowry arrangements, saving societies, wage labour and share cropping arrangements, to name bu a few). Again a productivity potential is being wasted.

- There has been agricultural instruction for the last thirty years under the label of Rural Science. Yet, school leavers, boys and girls alike, do not apply what they have learnt because teaching is hardly related ti agriculture as they know it from home and from teachers' private farms. Furthermore, eaching and practical demonstrations are poorly done and inconvincing. Thus, even this eminently practical and prevocational subject contributes little to pupils' productivity. Yet, a joint action of the educational system and the agricultural extension service could easily change the situation There would be need for a curriculum reform adapting content and method to rural situation, and there would be need for an approach to agricultural extension and marketing which assumes literacy and numeracy and provides incentives to those who master these skills.

Thus, the analytical concept of productivity of human labour applies to self-employment in all its forms, even in subsistence agriculture, but it is much more difficult to gauge. This ought to be a challange for African educationist and economists alike since people - pupils and producers - living and working in rural areas out number by far those in the "modern" sector for which the rate-of-return analysis has been devised in its present form.

Technically, alculations made for a rate-of-return analysis find out the difference between costs of education and the total income of an individual due to education. The difference between the two magnitudes is converted into a rate of interest on the investment reprsented by the total costs of education. We need not concern ourselves here with the intricacies of the technique. Nobody in fact does such calulations when he decides whether to finance his children's or relatives' education up to

a certain level. but considerations along these lines are being made by most villagers when they weigh the likelihood of their sons to fetch a well-paid, secure job against the money to spend on their education, the loss of their work capacity for farming, transport and hunting, their alienation from village life and local culture etc. The villagers claiming favours and gifts from young Obi Okonkwo upon his return from of education as an investment which has gone into literature (Achebe, Chinua). In a sense hardly menioned in the current literature on economics of education, education has been productive for whole communities having sponsored bright children. Villagers and small towns benefit from the earnings their educated members receive in distant places. There are the fund raising drives of the community improvement associations where very often people are taxed according to their income and status, Thus, at least part of the outlay for educating those who subsequently left the community to live and work elsewhere flows back to where it originated. And those who rose to posts of political and administrative influence eventually influence decisions in favour of their home community. Returns to education have been particularly high in the years immediately preceding independence and after. It is therefore not surprising that the social demand for education rose sharply and was felt as a major political pressure by the new governments. On the other hand, this was just the time when economics of education seemed to provide a sound justification for yielding to this demand and pushing further ahead. This in turn gave rise to the "school leaver problem," the massive unemployment of those who successfully completed primary school. The expansion of secondary schooling in many countries, again yielding to political pressure, will produce and some areas already has produced unemployment of secondary school leavers.

There has been a tendency to attribute the difficulty in finding employment to falling standards due to an overexpansion of education.

> The typical response to this overwhelming pressure of popular demand has been to spread sparse resources - classrooms, teachers, books and the like - thinner and thinner over more students, until in many situations education became a caricature of itself and a travesty. (Coombs, 1969, p. 20)

But in fact, this seems to me typical for the overestimation of the contribution of education to development held by many educators and politicians, especially in the light of the preceding discussions. Employment opportunities simply have not grown at the same rate as the output of schools.

> Educational systems and their outputs, especially in developing countries, have in recent years have been growing two to three times as fast as the economy, hence faster than the number of new jobs available....(Coombs,Ph., 1969, p.21)

And Blaug puts it in more economic terms when he says:

> .....it is not lack of aggregate demand but lack of capital in relation to the size of the labour force that basically accounts for mass enemployment in the Third World.

The expansion of education has been mostly in general education. Vocational education has not grown at the same speed since it involves much heavier spending. So while there is unemployment of people having had some general education there is a shortage of middle level technical personnel and skilled labour at the same time. Yet, vocational or agricultural training and a vocational and agricultural bias in general edcucation will not solve this problem, although it might have merits on different accounts. There are restrictions in the institutional order of things outside the realm of education that contribute heavily to the unemployment problem and to the concurrent loss in productivity.

Addressing himself to the refusal of shool-leavers to take up farming, FOSTER reaches the following conclusions:

> The demands of kin and the constrictions of traditional land tenure with its usual concomitant of endless litigation combine to make 'progressive' farming a hazardous endeavour. In effect, if we are to really appreciate the factors that militate against individuals entering agriculture, we must examine the neotraditional institutional's complext in which agricultural activities take place. It is probably in this complex and in the structure of the accompanying incentives that the primary variables lie.. (Foester, 1968, p. 410)

Lewis sees the problem in much the same way, discussing the optimum size of a school system:

> How big should the base of the pyramid be in an under-developed country with a large subsistence sector? This subsistence sector is the problem.... the economy needs a simulataneous approach: buidling rural schools while simultaneously reforming the agrarian structure so that it can absorb and hold the products of the schools. (Lewis,W.A., 1969,p.78)

Summing up our discussions at the micro-level what can we say?

- General and vocational education enhance the productivity of an andividual although the exact effects are difficult to assess.
- This is true for employed labour as much as for people self-employed in the modern or the subsistence sector.
- There is, therefore, a contribution of education to development.
- The very success of education in providing higher income has lead to an imbalance on the labour market. It would seem that such an imbalance cannot be corrected by the school system itself, i.e. the employment problem cannot be solved by expanding the system still further so as to retain over more people, not by curriculum reform.

Changes that put the potential productivity of school leavers to effective use will have to be made in sectors outside the educational system. Like any other factor of production, education yields lower and lower returns if it grows out of proportion with complementary factors of production.

Another important economic contribution of education seems to be the selection and certification of pupils and students. In relying on the screening power if the tests leading to the different school leaving and training certificates, employers save a lot of money since they would otherwise have to develop their own selection mechanisms (Blaug, M., 1974). This function of education does of course not contribute to building up a person's productivity.

3.3. Does Education Impair Development?

Following the educational crisis" that became visible most clearly in the "school leaver problem," education has tended to become suddenly the scapegoat for hopes not fulfilled in the process of development. Education in its present form came to be viewed as a liability rather than an asset in certain quarters:

> Present educational facilities constitute an obstacle to rural progress because people are not rained for agriculture, and academic systems of formal education are the chief determinant of attitudes hostile to the practices of rural agriculture. Schools are regarded as primarily responsible for the flight from the rural areas to the towns....
> (Foster, P.J., 1968, p.396)

The book LEARNING TO BE states an even more extereme view:

> Schools.....push young people out towards the towns, after having helped to turn them away from their own native springs of life: which are most necessary for personality development and to the formation of a sense of national identity.

> The effect of the educated person's climb to higher social and cultural levels is to him into a rootless creature, a potential expatriate....(Faure et al., 1972, p.246/247)

ILLICH's proposals for "deschooling society" are too well known to need much mention here.

Taking a less passionate stand one might look at the total cost of education, at the efficiency of the school system in producing output and at alternatives foregone. The latter nations is of some importance in a context of extremely scarce resources for development projects. It boils down to the question whether some or all the public money spent on education would have a higher development effect if spent on alternative projects. This question becomes very real when we remember that the lack of complementary factors of production makes the output of schools less valuable, economically, than they could have been. Would it be preferable to take part of the money spent on education to develop those other factors of production?

3.3.1. Cost and efficiency

The cost of education is high in Africa. Public spending reaches between 20 and 30 per cent of annual national budgets which is a high proportion at any rate. The pressure of social demand for more education would lead to an even higher proportion were it not for constraints coming from other departments of government. Unit costs per student can be seen in table 1 taken from a UNESCO publication.

Table I: Unit costs (expenditure per student) by level and type of education in teh selected countries, 1968

Country, currency, and exchange rate in U.S. dollars	Primary	Second level			Higher
		General	Vocational	Teacher training	
Argentina (peso, 0.00404)	24 683	53 449	82 758	—	93 598
Chile (escudo, 0.2288)	246[1]	584	834	843	4 280
China (Taiwan) (New Taiwan dollar, 0.0249)	536	1 536	2 739	6 074	8 524
Colombia (peso, 0.0740)	359	1 212	1 641	1 608	11 665
Czechoslovakia (koruna, 0.1388)	1 486	2 270	3 006	—	14 614
Finland (markka, 0.3125)	1 271	1 059	2 408	5 093	3 217
Germany (Federal Republic of) (Deutsche Mark, 0.2514)	885[3]	1 782	691[3]	—	5 859
Jordan[4] (dinar, 2.80)	12	18	89	—	161
Madagascar (franc, 0.00405)	5 862	111 613	191 012	275 053[5]	259 211
Morocco (dirham, 0.1976)	273	580	3 452	12 750	3 183

1. Including pre-school education.
2. Including special education.
3. Part-time secondary technical and vocational.
4. 1965.
5. Including teacher training at the third level.
Source. Unesco Statistical Yearbook 1968, Paris, 1969.

Note: In order to compare costs between countries, entries in the table should be multiplied by the exchange rate supplied for each country.

What does the public get for its expenditure? How efficiently does the school system train those it recruits?

There has been much talk of wastage. Drop-out rates and repeating are indicators for relatively high inefficiency of the system. Table 2 shows retention rates in African states which, according to the author of teh study, still underestimate the real drop-out rates since they include repeaters at every level of primary school. Based on similar findings, COOMBS expresses the opinion that

> ...an astonishing proportion of precious educational resources are being poured into, not educating youngsters, but producing high statistics of drop-outs and repeaters. (Coombs, 1969, p.20)

Table 2: Retention rates, in African States, from the first to the sixth year of schooling

Year	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66
First	100					
Second		90 (66)[1]				
Third			81 (57)			
Fourth				73 (46)		
Fifth					66 (37)	
Sixth						59 (32)

1. Figures in brackets are the actual returns; the first figures represent the targets aimed at.

Source: UNESCO, Educational Planning - a world survey of problems and prospects, Paris 1970, table 1, p.47

Obviously, money is spent in order to recruit pupils and train them for one, two or three years. When they leave, they will, most of the time, not even be literate which means that the money spent on them is completely lost. The UNESCO-study which furnished us with the two tables above comes to a gloomy conclusion:

> During the past ten years or so it has become more and more clear that problems of wastage and retardation reach in many developing countries such high proportions as to threaten to cancel out, or at least to retard very considerably, the increase in enrolments won at the cost of heavy financial effort. (UNESCO, 1970, p.46)

On the one hand one is tempted to say "Thank God" since otherwise the school leaver problem would be even more serious. On the other hand, it seems clear that the same amount of money spent on fewer pupils would have meant a smaller pupil-teacher ratio, better classrooms and teaching aids, and better trained teachers. This in itself might have helped to reduce wastage and equip school leavers with a better package. That an expansionist approach has been chosen, instead, would seem to be the tribute paid to political pressure.

3.3.2. Alternatives

Can one think of alternative way of spending part of all the money invested in education? These should be projects that have a higher effect development than education. Any serious analysis of this problem quickly becomes highly technical. This cannot be our aim in theis paper, nor can we be exhaustive. By way of example we shall mention a few possible alternatives.

- Within education, one might shift emphasis between types and levels of education. One might shift resources from secondary to primary education or from general to vocational education. One might forego an expansion of the total system in favour of better teacher training

school inspection and guidance, and better management of the total system. If those measures reduce the internal inefficiency of the system, the might produce the same number of school leavers as the present system but with better qualifications.

- Money spent on a thorough-going curriculum revision might make teh system more effective in that teaching contents relate better to the local environment, its problems, challanges, and chances. In this way, even general educ ation might become more useful to school leavers. Again, a loss in numbers of enrolment would not necessarily lead to a loss of output but might improve the "productivity" of school leavers.

- There are more radical alternatives than the ones discussed which tend to replace quantity by quality. One might consider spending resources devoted to education in quite different sections. What if part of the money went into the expansion and improvement of the agricultural extension and marketing services. These actions would be related much more directly to production than schooling. Moreover, their benefits would go to the rural population. By increasing farmer's incomes in the rural areas, they would motivate them to remain instead of contributing to the rural exodus.

- One might also consider building farm to market roads, one could also pay farmers higher prices for their produce. All this would almost certainly stimulate production in rural areas much more directly and with less delay than education.

Since education has raised such high hopes its contribution to development, it will have to stand up to the challenge of the alternative use of resources. Such a challenge was out of the question when education was seen as an economic investment than as a value by itself. It can face the challange only by looing more closely at the needs of young people in different walks of life in order to adjust its contents and teaching methods to these needs.

In particular, all those concerned with education ought to stop seeing a given level of education predominantly as a preparatory step for the next higher level.

4. Final remarks

Referring back to our definition of development, we have left out considerations of how education could enable people to effectively exercise their rights and duties of participation in development. Since this applied much more to the self-employed farming population, the traders and craftsmen of rural areas and the "informal" sector of the cities and towns than to wage labour, the literature is silent on this account. Developing skills, knowledge and attitudes conducive to co-operation features in some African curricula. But more work, more thinking and experimentation will be needed in this field, and course participants might find it a particularly interesting task to develop thispart of a development-oriented curriculum, off the beaten tracks of European and American educational thought and practice.

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